

Toward a Conceptualization of Online Community Health

Research-in-Progress

David Wagner

German Graduate School of
Management and Law (GGS)
Bildungscampus 2
D-74076 Heilbronn
david.wagner@ggs.de

Alexander Richter

Department of Informatics
University of Zurich
Binzmuehlestrasse 14
CH-8050 Zurich
arichter@ifi.uzh.ch

Matthias Trier

Copenhagen Business School
Department of IT Management
Howitzvej 60
DK-2000 Frederiksberg
mt.itm@cbs.dk

Heinz-Theo Wagner

German Graduate School of
Management and Law (GGS)
Bildungscampus 2
D-74076 Heilbronn
heinz-theo.wagner@ggs.de

Abstract

Along with the increasing popularity of social media and online communities in many business settings, the notion of online community health has become a common means by which community managers judge the condition or state of their communities. It has also been introduced to the literature, yet the concept remains underspecified and fragmented. In this paper, we work toward a construct conceptualization of online community health. Through a review of extant literature and dialogue with specialists in the field, we develop a multi-dimensional construct of online community health, consisting of seven elements. In writing this paper, we attempt to foster theory development around new organizational forms by advancing a new and important construct. The paper further provides guidance to the managers of social media and online communities by taking a systematic look at the well-being of their communities.

Keywords: Social media, online communities, online community success, online community health, construct conceptualization

Introduction

The proliferation of social media and online communities has attracted considerable interest in management science (Faraj et al. 2011; Haeffliger et al. 2011; Weinberg et al. 2013), information systems research (Aral et al. 2013; Ransbotham and Kane 2011), and more broadly in the social sciences (Kraut and Resnick 2011; Rainie and Wellman 2012). They may be described as platforms that help individuals or groups to connect and interact via the Internet based on joint interests, characteristics, or goals (Faraj et al. 2011; Kietzmann et al. 2011). Today many organizations engage in a variety of community settings that span departmental and organizational boundaries (Gulati et al. 2012; Jarvenpaa and Lang 2011; Nambisan and Baron 2010), which helps them leverage knowledge from a wide variety of stakeholders (von Krogh 2012; McAfee 2009; Wagner et al. 2014). Not only are many traditional organizations rapidly adopting those platforms (Chui et al. 2012; Kane, Palmer, et al. 2014), several emerging organizations are heavily centered around communities (Gray et al. 2011; Oestreicher-Singer and Zalmanson 2013; Puranam et al. 2014). This development goes hand in hand with the establishment of new functions, such as dedicated community management teams (Kane et al. 2009; Parmentier and Gandia 2013).

The basic objective of community management is to keep a community alive and thriving. This is a challenging task (Ren et al. 2011). For example, as much as 90 percent of the individuals joining a community never become active in the first place (Nonnecke and Preece 2000; Schneider et al. 2013). In addition, the abundance of social media channels and online communities creates competitive pressures for members' attention and time (Wang et al. 2013; Watson-Manheim and Bélanger 2007). In the face of these challenges, community managers require appropriate means to evaluate and manage their online communities. However, assessing the success of a community is not straight-forward since it is not directly comparable to other types of performance evaluations already established in the literature, e.g., job performance, organizational performance, or information systems success (Arvey and Murphy 1998; DeLone and McLean 1992; March and Sutton 1997). Several scholars have attempted to capture determinants of successful communities; they include members, content, responsiveness, and interactivity (Hew 2009; Lili and Rong 2013; Preece 2001). The problem with the notion of community success is that it partly relates to the strategic intent of the host organization (Larson and Watson 2011), i.e., what the host organization does and how the community helps it achieve its goals. While this link is important and deserves close attention by scholars, the viability and functionality of any online community may be scrutinized regardless of its strategic fit.

A promising approach in this regard is to direct our attention to online community health. The construct has been adopted by numerous practitioners (Lithium 2012) and has recently entered the academic discourse (Wang and Lantzy 2011). It is regarded as a holistic approach towards capturing the current state of a community's vital systems. The health metaphor is borrowed from the field of medicine (Larson 1991) and is increasingly used in organizational settings (MacIntosh et al. 2007; Morgan 2006; Stanford 2012). Applying this thinking to online communities enables us to address the complex interdependencies that exist in an adaptive and open systems. It emphasizes a prioritization of the inner workings and the notion of development rather than a mere categorization into successful or unsuccessful communities. However, the initial proposal from Wang and Lantzy (2011) lacks a solid grounding in the literature and has not been empirically tested. A more systematic, comprehensive conceptualization thus seems warranted. We therefore formulate the following research question: *How can the construct of online community health be comprehensively conceptualized?*

In order to answer the research question, we first review the literature. We then assess and refine the preliminary conceptualization with qualitative research that interrogates the perceptions of practitioners who monitor community health. With a view toward further empirical validation, we have gained access to a substantial, longitudinal community data set of Europe's biggest automotive community and provide initial insights into online community health on a subsample of four purposefully selected forums.

With our research, we aim to meet the twin objectives of engaged scholarship (Van de Ven 2007), producing relevant insights for both theory and practice. We contribute to theory development (Corley and Gioia 2011; Urquhart and Vaast 2012) around new organizational forms (Puranam et al. 2014) by advancing a new and important construct (MacKenzie et al. 2011), i.e., online community health. We

further support a specific organizational role (Jaworski 2011), i.e., professional social media and community managers, seeking to evaluate the performance of their communities.

The rest of this paper is structured as follows: We start by briefly reviewing extant literature. We then present the methods that were used for empirical refinement of the theoretical dimensions. Next, we put forward seven dimensions of online community health and identify useful operationalizations as well as links to our data. We conclude the paper with a discussion of implications for theory and practice.

Theoretical Background

Sproull and Arriaga (2007, p. 898) define *online communities* as “large collectivities of voluntary members whose primary goal is member and collective welfare, whose members share a common interest, experience, or conviction and positive regard for other members, and who interact with one another and contribute to the collectivity primarily over the Net”. Recent research has scrutinized how online communities may be designed (Gulati et al. 2012; Kraut and Resnick 2011), how exchanges take place in such communities (Faraj and Johnson 2011), and how to tap the massive potential of passive community members (Schneider et al. 2013). Wider research agendas are also beginning to surface (Aral et al. 2013; Haeffliger et al. 2011; Kane, Alavi, et al. 2014; Kietzmann et al. 2012), thus helping scholars to create a more systematic account of this emerging phenomenon.

In an early attempt to scrutinize *online community success*, Preece (2001) identifies a number of determinants. In particular, she names interactivity, reciprocity, quality of contributions, the number of community members, types of members, flaming and uncivil behavior as well as the trustworthiness of information provided. Building on her work, Hew (2009) adds members’ willingness to share knowledge, diversity of views, technology, relevant discussions, a respectful environment, and rapid responses to members’ queries. Arguello et al. (2006) characterize the success of a community as the ability to reply to members’ queries and keep them satisfied over time. Other scholars conceptualize community success akin to information systems success (e.g., Lili and Rong 2013; Lin and Lee 2006). Yet, this is problematic, as several of the IS success dimensions do not apply in online community contexts, e.g., system quality, service quality, or use intentions. Ransbotham and Kane (2011) approximate performance in an online community, more specifically Wikipedia, by reviewing articles that reach a ‘featured article’ status, an outcome they classify as collaboration success. Notwithstanding, not in all online communities can a similar outcome variable be identified. For example, health communities are geared toward social support (Young 2013). Scientific communities, in turn, are about debate (Preece 2001).

As suggested in the introduction, we would like to suggest shifting attention from online community success to *online community health*. In order to do so, however, a few logical steps are required. First, a definition of health needs to be advanced. Next, we need to make clear why it is adequate to apply the health logic to organizations and online communities. Ultimately, the advantages of the health construct as compared to the success construct need to be specified. According to Larson (1991), there are five general approaches to defining health, of which the holistic model is the most popular one. It includes the definition of health by the World Health Organization (1948) as “a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity”. Larson (1991) further notes that health is a transient state and is anchored in both culture and time, making precise measurement difficult and complex. Nonetheless, measurement is possible if the indicators are accurately chosen to reflect the definition. Scholars have frequently made use of the image of an organism to describe organizational life (Morgan 2006). Stanford (2012) argues that the analogy is suitable because both are complex, adaptive open systems in which health issues are frequently diagnosed and treated. Wang and Lantzy (2011, p. 3) are the first scholars to apply the health analogy to online communities; they define online community health as “the extent to which [its] vital systems are performing normally at any given time”. Building on the aforementioned definitions, we define online community physiology as the study of the functioning of online communities. Analogous to the three elements included in the WHO definition, such functioning encompasses physical, psychological, and social aspects of the online community.

In comparison to online community success, a focus on health prioritizes effective inner workings and the growth from within over a targeted output for externals. Whereas community success seems to be a current or past measurement, community health gives a sense not only of current state, but of prognosis for the future. It entails a strong expectation of health, prosperity, and capacity at a later time, while

success does not convey this continuity aspect. This is also reflected in the fact that diagnoses of health may be carried out for both problem-solving (i.e., reactive) as well as preventive (i.e., proactive) purposes (Stanford 2012). Ultimately, the term success implies that the online community somehow contributes to the performance of the host organization (Larson and Watson 2011). While important, such a focus on external expectations blinds us, or even runs counter to internal social interactions and processes (MacIntosh et al. 2007) that are at the heart of the community and make it work. An online community may well be healthy without being successful in the sense that it contributes (directly) to firm performance. Health is thus a necessary, but not sufficient condition for community success.

Method

In our research, we aim at a construct conceptualization of online community health by going beyond the existing proposals through an empirical assessment and refinement of the proposed dimensions (MacKenzie et al. 2011; Nunnally and Bernstein 2006). The first part of the research project, presented in this paper, consists of a qualitative analysis of practitioner perceptions based on interviews (Kvale 2008). In the subsequent stage, a quantitative study is to be conducted with a longitudinal data set of an online community (Giles 2012; Hogan 2008; Lazer et al. 2009).

The focal community is Motor-Talk, Europe's biggest automotive community. It was established in 2001 through an integration of roughly 30 automotive forums and was traditionally run on vBulletin, standard software for bulletin boards. It eventually grew too big and a proprietary system had to be developed. The community currently has 2.3m members. However, the community still retains the format and character of a web-based, asynchronous discussion group. Membership is free and open. Anyone on the web, even non-members, can access its entire content and the community website is viewed by roughly 4.1m unique visitors a month. In order for people to contribute, they have to register or log in. Participation is voluntary and not anonymous, a username and some profile information will be shown as part of the message header. Members may inquire about a variety of issues, e.g., a particular problem they may have with their vehicle or topics of general interest to the automotive world. In addition to the content that is generated by its community members, i.e., roughly 350,000 posts per month, the host organization additionally employs an editorial team that produces up-to-date news.

As of today, the community hosts more than 600 brand and thematic forums and employs a team of five full-time community managers and numerous volunteer moderators to take care of them. Data collection for the qualitative phase is still ongoing and collected through interviews with key informants (Kumar et al. 1993; Kvale 2008), and additional documents, e.g., an internal concept paper on community health. Interviews with members of the community management team helped us ground our understanding of the construct of community health and how the community works (Eisenhardt 1989; MacKenzie et al. 2011). The three semi-structured interviews were conducted from November 2012 until April 2013. The interviews were conducted in person, recorded, and transcribed. Because the interviews have been conducted in German, the quotations in this paper were translated into English (Regmi et al. 2010). Moreover, the results of the literature review and the interviews were presented in Berlin at an industry-wide event for social media and community managers in October 2013 and additional feedback was collected from a variety of practitioners. This allowed us to make confirmatory assessments of the dimensions and their particular characteristics as well as to understand the general approach taken by community managers of other organizations.

Table 1. Descriptive Statistics of the Four Forums				
	Forum 1	Forum 2	Forum 3	Forum 4
Posts	510,312	136,525	405,380	52,987
Threads	7,825	8,737	39,991	5,168
Users	11,973	8,987	14,183	4,995
Months	137	140	138	106

Out of the total of 600 forums, we collected archival data for four forums, in particular. We selected the forums based on the following criteria: forum type and status-quo of community health. Two of these

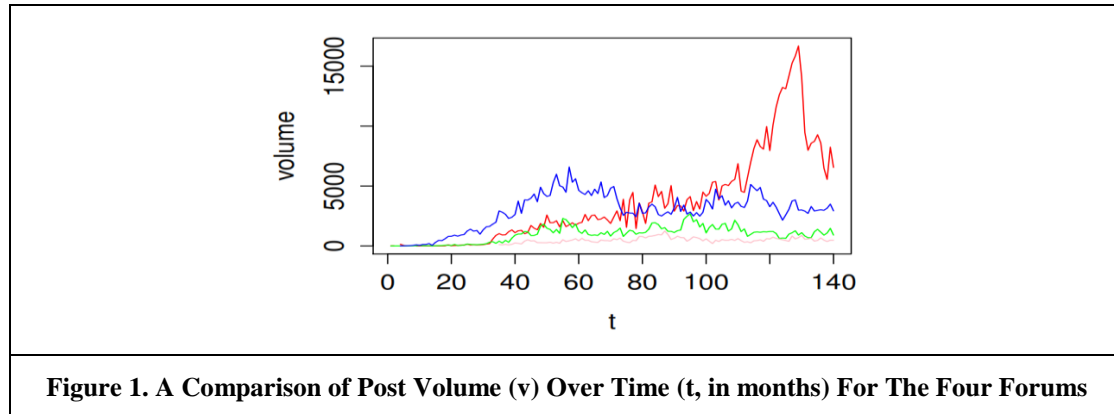
forums are brand forums, i.e., they are associated with a particular automobile model. The other two forums are thematic forums which are centered on a subject that is related to the automobile world. In addition, two of these forums are deemed to be healthy forums and the other two, in turn, are deemed unhealthy as judged by the community management team. Contrasting healthy and unhealthy forums from a variety of more than 600 forums allows us to focus on extreme poles and maximize differences in the data (Miles and Huberman 1994; Urquhart and Vaast 2012). Table 1 displays some descriptive statistics of the four forums.

Discussion of Dimensions for Community Health

Next, we briefly review the dimensions and operationalizations for online community health forwarded by extant literature. Furthermore, we provide links to our data. The section concludes with a summarizing table matching dimensions from the literature with the empirical insights we gathered from practice.

Quantity of content

New content has been suggested as a central determinant of community health (Butler 2001; Preece 2001; Wang and Lantzy 2011). The paper by Lithium (2012) suggests that there may be a critical threshold level of posting activity per community segment, though it is not clear how such a threshold should be determined. Absolute and relative measures of content (i.e., basic descriptive statistics; cf. Table 1), such as average posts or growth rates, always carry the trouble of interpretation without a proper reference. In order to determine a healthy amount of content or posting activity for a community or forum, we should instead establish a reference based on the history of a community or forum. In the automotive community, new posts and new threads were mentioned in both the interviews and in the internal concept paper. The volume of posts over time for the four forums is displayed in Figure 1. Whereas the practices of the community management team confirm the relevance of this dimension, the following citation also addresses its limitations: „Well, generally you can think of [a healthy community] as one that has a lot of activity... that’s a major criterion. But only because there’s much activity doesn’t necessarily mean the community is healthy.” (Community Manager, Interview 2, further i2)



Quality of content

It has been suggested that richness and helpfulness of content are important community parameters (Wang and Lantzy 2011). This is one of the few dimensions community health has in common with information systems success models (e.g., DeLone and McLean 2003; Lili and Rong 2013; Lin and Lee 2006). It is illustrated in the following statement: „If you post: ‘My car doesn’t start. What can I do?’ You can receive responses like ‘Check whether there’s enough gas in the tank’. But you can also receive responses like ‘Check whether relay number 28 in fuse box two really works’. This is really detailed information ... and the person asking the question can now fix the car themselves if he or she is capable of doing so.” (i2) Traffic, i.e., the number of page views, explicit acknowledgements of contributions, such as ‘likes’ or ‘thumbs-up’, as well as the number of subscriptions to a thread may be proxies for the relative usefulness of a post (Berger et al. 2014). Recent research by Petrič (2013) has started to take a more systematic look at conversation quality in online communities, yet its focus remains to be perceptions which are captured via questionnaires. The interviewed community managers confirmed on several

occasions that it currently seems to be too much effort to evaluate the quality of community content in much detail.

Interactivity

High interactivity is characterized by long threads that contain many posts around a topic. This is also referred to as thread depth (Preece 2001). In addition to thread depth, one can argue that it is also important how many community members engage in a conversation. Therefore, it has been suggested to take into account unique contributors to a thread (Lithium 2012; Wang and Lantzy 2011). Interactivity is not confounded with new content, the first dimension. While new content measures contributions at the community level, interactivity captures the contributions at the thread or topic level. The community management team of the automotive community confirmed the relevance of this dimension as it collects and analyzes the number of posts and the unique users per thread.

Atmosphere

Preece (2001) suggested flaming and uncivil behavior as indicators for an unhealthy community. She stated that abusive language or harassment is not acceptable in most communities and many have specific policies to control such behavior. As an operationalization, she proposed classifying and counting incidents of uncivil behavior that would indicate adherence to a policy and the effectiveness of moderators. However, our results show that flaming and uncivil behavior are just two types of behavior that belong to a larger category, i.e., community atmosphere. Community atmosphere describes the general ‘touch and feel’ of the community and incorporates aspects such as welcoming new members, creating a respectful environment, encouraging constructive exchanges, and regulating deviant behavior (Kiesler et al. 2011; Lili and Rong 2013; Wallace 2001). This is also reflected in the following quote: “You shouldn’t underestimate that ... the people who make up the community have an interest in it being functional. That’s the majority of people. You normally wouldn’t want go to a bar in which you feel uncomfortable. It’s the same here. If people don’t feel comfortable, they don’t show up in the community.” (i3) The community management team of the automotive community further monitors the number of warnings issued in a given forum as well as the amount and activity of trolls.

Membership and members’ activities

As stated earlier, membership count of a community is a vital sign of its success (Preece 2001; Wang and Lantzy 2011). A straightforward operationalization is the amount of registrations to the community. Similar to the issue of content, sheer numbers of membership (e.g., registered users; Lithium, 2012) insufficiently indicate community health. A community manager remarks: „In an ideal world, there’s a balance between those people in the community who ask questions and those who answer. If you have that balance, you have a thriving community.” (i1) Healthy communities rely on moderators and active community members who may be considered core members. Core members have recently been identified with help of network measures, e.g., centrality (Wang and Lantzy 2011; Wasko and Faraj 2005). Since the use of centrality requires an arbitrary threshold to identify core members, using the k -core decomposition of a social network of all users can be helpful (Seidman 1983). Core members of a community are thus not determined by a discretionary value, but because they belong to the core based on the structure of a social network (cf. users, vertices, and k -core vertices in Table 2). The community management team of the automotive community uses a number of measures to track membership and their activities, such as new sign-ups and active users, but they also evaluate activity levels, quality levels of member contributions, and the degree to which members network.

Table 2. An Overview of Registered, Active, and Core Community Members				
	Forum 1	Forum 2	Forum 3	Forum 4
Users	11,973	8,987	14,183	4,995
Vertices	6,116	4,145	8,607	2,292
K-Core	64	31	40	19
Vertices (K-Core)	146	60	139	40

Responsiveness

A response may provide an answer to a question, advice, or support to someone in need as well as opinions on a discussion topic (Preece 2001). Responsiveness is usually operationalized as the percentage of new threads that receive at least one reply. Of course, it is not only important to consider whether another member of the community responds to a new topic at all, but when an answer is provided. Some scholars have suggested taking account of the average time that elapsed between the first and second post in each new thread that receives at least one reply. Lithium (2012) extends this thought by suggesting to account for all of the response times in a thread. The community management team of the automotive community applies this dimension by counting new threads without an answer, for example, and active threads, i.e., threads which have received a reply within the last 30 days.

Trust

Trust is a key mechanism for successful interactions in many online communities (Jeacle and Carter 2011; Shneiderman 2013). When Preece (2001) refers to trust, she alludes to the ability to trust people's actions or what they say. This aspect can be further broken down into trust in other users as sources of information and trust in the content of the information provided (Shankar et al. 2002). Previous research has shown that in order to increase trust, signals of trustworthiness may be used (Akerlof 1970; Mayer et al. 1995). In the words of a community manager: „Well, tips from someone who's written 1,000 posts are perceived differently from someone who's only written one. ... You presuppose that person is acting honestly. ... because that person has built up a reputation". (i1) The community management team of the automotive community uses several measures to establish trust, e.g., through the provision of publicly visible signals, such as the amount of member contributions, the duration of members' belonging to the community, and the time of the last post.

In the section above, we have described how the dimensions of community health can be motivated by extant literature and how they are applied in practice. A summary is provided in Table 3 below.

Table 3. A Summary of Dimensions for Community Health from Theory and Practice			
Dimension	Description	Support from literature	Evidence from practice (proxies used)
Content (quantitative)	The addition of new content, such as new threads and new messages.	Lithium (2012), Preece (2001), Wang & Lantzy (2011)	Yes; e.g., new posts, new threads
Content (qualitative)	Information quality or, alternatively, amount of empathy or social satisfaction online.	Hew (2009), Lin & Lee (2006), Lili & Rong (2013), Petrič (2013), Preece (2001), Wang & Lantzy (2011)	Yes; e.g., internal references to older posts, acknowledgements of contributions, total views of thread
Interactivity	A high level of interactivity can be characterized by long threads with many posts and many unique users contributing to it.	Hew (2009), Lithium (2012), Preece (2001), Wang & Lantzy (2011)	Yes, e.g., number of posts per thread, unique users per thread
Atmosphere	The general 'touch and feel' of the community, e.g., flaming and constructiveness of exchanges.	Hew (2009), Kiesler et al. (2011), Lili & Rong (2013), Lithium (2012), Preece (2001), Wallace (2001)	Yes; e.g., number of warnings issued, amount/activity of trolls
Members	The number of community members. Of particular	Lithium (2012),	Yes; e.g., activity level, quality level, networking

	interest is the retention of central or core community members over time.	Preece (2001), Schneider et al. (2013), Wang & Lantzy (2011), Wasko & Faraj (2005)	level, active users, new sign ups/registrations
Responsiveness	A response may provide answers to a question, advice or support to someone in need as well as opinions on a discussion topic. The timing of the response also matters.	Hew (2009), Lin & Lee (2006), Lithium (2012), Preece (2001), Wang & Lantzy (2011)	Yes; e.g., new threads without an answer, active threads
Trust	The ability to trust people's actions or what they say.	Jeacle & Carter (2011), Lin & Lee (2006), Lithium (2012), Preece (2001), Shankar et al. (2002), Shneiderman (2013)	Yes; contribution ratings/amount of contributions, member since, time of last post

Conclusion

This research paper is designed to meet the dual objectives of engaged scholarship (Van de Ven 2007), thus producing relevant insights for both theory and practice. As for theoretical implications, the paper deals with online communities, a new and important organizational form (Butler 2001; Puranam et al. 2014). We follow the calls by fellow scholars to engage in theory development (Corley and Gioia 2011; Majchrzak 2009; Urquhart and Vaast 2012) by laying the foundation for an emerging construct (MacKenzie et al. 2011), i.e., online community health (Wang and Lantzy 2011). In doing so, we attempt to derive a conceptualization that is beyond the reach of current performance variables used in organizational or information systems contexts, such as job performance, organizational performance, or information systems success (Arvey and Murphy 1998; DeLone and McLean 1992; March and Sutton 1997). Regarding the implications for practice, the paper is targeted at a specific group of practitioners, i.e., social media and online community managers (Jaworski 2011; Kane et al. 2009; Parmentier and Gandia 2013). The construct of online community health informs the evaluation of their online communities and allows them to conduct regular health assessments that lead to actionable insights. They may further use the construct for preventive purposes or to address community ailments. Given the lack of an integrated framework in the literature and the prominence of the construct among practitioners, the paper is of high relevance.

Of course, it needs to be acknowledged that an online community is not entirely healthy or unhealthy, it may function well in a range of circumstances. Our results are limited to the automotive community we studied and data is available for only a small subsection of the forums that form part of the overall community. We leave it to future research to extend analyses to other types of online communities. However, the feedback from the industry-wide event of practitioners leaves us confident that the conceptualization we provide is sufficiently generic to be applicable to a wide variety of community settings. Another limitation is that we have not yet identified operationalizations for all dimensions. For example, content quality and community atmosphere are surely good indicators for community health, but their evaluation remains difficult and is currently too cumbersome for practitioners. Some proxies are offered, but there is much room for fellow scholars to enhance and refine them. Future work should also focus on testing the measures of community health in order to predict community survival. Interventions for community ailments, as measured by the community health construct, should also be developed.

Acknowledgements

We would like to thank Michael Albert and Bianca Oertel from the Motortalk community management team for their time and effort in supporting this project. We are grateful to Shannon Lantzy for comments on an earlier version of this manuscript. Last but not least, we are indebted to Steffen Blaschke for help with initial community computations.

References

- Akerlof, G. A. 1970. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," *The Quarterly Journal of Economics* (84:3), pp. 488–500.
- Aral, S., Dellarocas, C., and Godes, D. 2013. "Introduction to the Special Issue—Social Media and Business Transformation: A Framework for Research," *Information Systems Research* (24:1), pp. 3–13.
- Arguello, J., Butler, B. S., Joyce, E., Kraut, R. E., Ling, K. S., Rosé, C., and Wang, X. 2006. "Talk to Me: Foundations for Successful Individual-Group Interactions in Online Communities," in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, New York, NY: ACM, pp. 959–968.
- Arvey, R. D., and Murphy, K. R. 1998. "Performance Evaluation in Work Settings," *Annual Review of Psychology* (49:1), pp. 141–168.
- Berger, K., Klier, J., Klier, M., and Richter, A. 2014. "Who is Key?-Value Adding Users in Enterprise Social Networks," in *Proceedings of the 2014 European Conference on Information Systems (ECIS)*.
- Butler, B. S. 2001. "Membership Size, Communication Activity, and Sustainability: A Resource-Based Model of Online Social Structures," *Information Systems Research* (12:4), pp. 346–362.
- Chui, M., Manyika, J., Bughin, J., Dobbs, R., Roxburg, C., Sarrazin, H., Sands, G., and Westergren, M. 2012. "The Social Economy: Unlocking Value and Productivity Through Social Technologies," Washington, DC: McKinsey Global Institute.
- Corley, K. G., and Gioia, D. A. 2011. "Building Theory About Theory Building: What Constitutes a Theoretical Contribution?," *Academy of Management Review* (36:1), pp. 12–32.
- DeLone, W. H., and McLean, E. R. 1992. "Information Systems Success: The Quest for the Dependent Variable," *Information Systems Research* (3:1), pp. 60–95.
- DeLone, W. H., and McLean, E. R. 2003. "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update," *Journal of Management Information Systems* (19:4), pp. 9–30.
- Eisenhardt, K. M. 1989. "Building Theories From Case Study Research," *Academy of Management Review* (14:4), pp. 532–550.
- Faraj, S., Jarvenpaa, S. L., and Majchrzak, A. 2011. "Knowledge Collaboration in Online Communities," *Organization Science* (22:5), pp. 1224–1239.
- Faraj, S., and Johnson, S. L. 2011. "Network Exchange Patterns in Online Communities," *Organization Science* (22:6), pp. 1464–1480.
- Giles, J. 2012. "Computational Social Science: Making the Links," *Nature* (488:7412), pp. 448–450.
- Gray, P., Parise, S., and Iyer, B. 2011. "Innovation Impacts of Using Social Bookmarking Systems," *MIS Quarterly* (35:3), pp. 629–643.
- Gulati, R., Puranam, P., and Tushman, M. 2012. "Meta-Organization Design: Rethinking Design in Interorganizational and Community Contexts," *Strategic Management Journal* (33:6), pp. 571–586.
- Haeffliger, S., Monteiro, E., Foray, D., and von Krogh, G. 2011. "Social Software and Strategy," *Long Range Planning* (44:5-6), pp. 297–316.
- Hew, K. F. 2009. "Determinants of Success for Online Communities: An Analysis of Three Communities in Terms of Members' Perceived Professional Development," *Behaviour & Information Technology* (28:5), pp. 433–445.
- Hogan, B. 2008. "Analyzing Social Networks via the Internet," in *The SAGE Handbook of Online Research Methods*, N. Fielding (ed.), London, UK: SAGE Publications, pp. 141–160.
- Jarvenpaa, S. L., and Lang, K. R. 2011. "Boundary Management in Online Communities: Case Studies of the Nine Inch Nails and ccMixter Music Remix Sites," *Long Range Planning* (44:5-6), pp. 440–457.
- Jaworski, B. J. 2011. "On Managerial Relevance," *Journal of Marketing* (75:4), pp. 211–224.
- Jeacle, I., and Carter, C. 2011. "In TripAdvisor We Trust: Rankings, Calculative Regimes and Abstract Systems," *Accounting, Organizations and Society* (36:4–5), pp. 293–309.
- Kane, G. C., Alavi, M., Labianca, G. (Joe), and Borgatti, S. P. 2014. "What's Different About Social Media Networks? A Framework and Research Agenda," *MIS Quarterly* (38:1), pp. 275–304.
- Kane, G. C., Fichman, R. G., Gallagher, J., and Glaser, J. 2009. "Community Relations 2.0.," *Harvard Business Review* (87:11), pp. 45–50.
- Kane, G. C., Palmer, D., Phillips, A. N., and Kiron, D. 2014. "Finding the Value in Social Business," *MIT Sloan Management Review* (55:3), pp. 81–88.

- Kiesler, S., Kraut, R. E., Resnick, P., and Kittur, A. 2011. "Regulating Behavior in Online Communities," in *Building Successful Online Communities: Evidence-Based Social Design*, R. E. Kraut and P. Resnick (eds.), Cambridge, MA: MIT Press, pp. 125–178.
- Kietzmann, J. H., Hermkens, K., McCarthy, I. P., and Silvestre, B. S. 2011. "Social Media? Get Serious! Understanding the Functional Building Blocks of Social Media," *Business Horizons* (54:3), pp. 241–251.
- Kietzmann, J. H., Silvestre, B. S., McCarthy, I. P., and Pitt, L. F. 2012. "Unpacking the Social Media Phenomenon: Towards a Research Agenda," *Journal of Public Affairs* (12:2), pp. 109–119.
- Kraut, R. E., and Resnick, P. 2011. *Building Successful Online Communities: Evidence-Based Social Design*, Cambridge, MA: MIT Press.
- Von Krogh, G. 2012. "How Does Social Software Change Knowledge Management? Toward a Strategic Research Agenda," *The Journal of Strategic Information Systems* (21:2), pp. 154–164.
- Kumar, N., Stern, L. W., and Anderson, J. C. 1993. "Conducting Interorganizational Research Using Key Informants," *Academy of Management Journal* (36:6), pp. 1633–1651.
- Kvale, S. 2008. *Doing Interviews*, London, UK: SAGE Publications.
- Larson, J. S. 1991. *The Measurement of Health: Concepts and Indicators*, Westport, CT: Greenwood Publishing Group.
- Larson, K., and Watson, R. 2011. "Tying Social Media Strategy to Firm Performance: A Social Media Analytics Framework," in *Proceedings of the 2014 International Conference on Information Systems (ICIS)*.
- Lazer, D., Pentland, A., Adamic, L., Aral, S., Barabási, A.-L., Brewer, D., Christakis, N., Contractor, N., Fowler, J., Gutmann, M., Jebara, T., King, G., Macy, M., Roy, D., and Alstyne, M. V. 2009. "Computational Social Science," *Science* (323:5915), pp. 721–723.
- Lili, L., and Rong, D. 2013. "Roles of Community Commitment and Community Atmosphere: An Empirical Study of Online Community Success," in *Proceedings of The 14th Wuhan International Conference on E-Business (WHICEB)*.
- Lin, H.-F., and Lee, G.-G. 2006. "Determinants of Success for Online Communities: An Empirical Study," *Behaviour & Information Technology* (25:6), pp. 479–488.
- Lithium. 2012. "Community Health Index for Online Communities," (available at <http://pages.lithium.com/community-health-index.html>, retrieved September 1, 2014).
- MacIntosh, R., MacLean, D., and Burns, H. 2007. "Health in Organization: Towards a Process-Based View," *Journal of Management Studies* (44:2), pp. 206–221.
- MacKenzie, S. B., Podsakoff, P. M., and Podsakoff, N. P. 2011. "Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques," *MIS Quarterly* (35:2), pp. 293–334.
- Majchrzak, A. 2009. "Comment: Where is the Theory in Wikis?," *MIS Quarterly* (33:1), pp. 18–20.
- March, J. G., and Sutton, R. I. 1997. "Organizational Performance as a Dependent Variable," *Organization Science* (8:6), pp. 698–706.
- Mayer, R. C., Davis, J. H., and Schoorman, F. D. 1995. "An Integrative Model of Organizational Trust," *Academy of Management Review* (20:3), pp. 709–734.
- McAfee, A. 2009. *Enterprise 2.0: New Collaborative Tools for Your Organization's Toughest Challenges*, Boston, MA: Harvard Business School Press.
- Miles, M. B., and Huberman, A. M. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*, Thousand Oaks, CA: Sage.
- Morgan, G. 2006. *Images of Organization*, Thousand Oaks, CA: SAGE Publications.
- Nambisan, S., and Baron, R. A. 2010. "Different Roles, Different Strokes: Organizing Virtual Customer Environments to Promote Two Types of Customer Contributions," *Organization Science* (21:2), pp. 554–572.
- Nonnecke, B., and Preece, J. 2000. "Lurker Demographics: Counting the Silent," in *Proceedings of the SIGCHI 2000 Conference on Human Factors in Computing Systems*, New York, NY: ACM, pp. 73–80.
- Nunnally, J. C., and Bernstein, I. H. 2006. *Psychometric Theory*, New York, NY: McGraw-Hill.
- Oestreicher-Singer, G., and Zalmanson, L. 2013. "Content or Community? A Digital Business Strategy for Content Providers in the Social Age," *MIS Quarterly* (37:2), pp. 591–616.
- Parmentier, G., and Gandia, R. 2013. "Managing Sustainable Innovation with a User Community Toolkit: The Case of the Video Game Trackmania," *Creativity and Innovation Management*, pp. 195–208.

- Petrič, G. 2013. "Perceived Quality of Conversations in Online Communities: Conceptual Framework, Scale Development, and Empirical Validation," *Cyberpsychology, Behavior, and Social Networking*, p. 130904074711008.
- Preece, J. 2001. "Sociability and Usability in Online Communities: Determining and Measuring Success," *Behaviour & Information Technology* (20:5), pp. 347–356.
- Puranam, P., Alexy, O., and Reitzig, M. 2014. "What's 'New' About New Forms of Organizing?," *Academy of Management Review* (39:2), pp. 162–180.
- Rainie, L., and Wellman, B. 2012. *Networked: The New Social Operating System*, Cambridge, MA: MIT Press.
- Ransbotham, S., and Kane, G. C. 2011. "Membership Turnover and Collaboration Success in Online Communities: Explaining Rises and Falls from Grace in Wikipedia," *MIS Quarterly* (35:3), pp. 613–627.
- Regmi, K., Naidoo, J., and Pilkington, P. 2010. "Understanding the Processes of Translation and Transliteration in Qualitative Research," *International Journal of Qualitative Methods* (9:1), pp. 16–26.
- Ren, Y., Kraut, R. E., Kiesler, S., and Resnick, P. 2011. "Encouraging Commitment in Online Communities," in *Building Successful Online Communities: Evidence-Based Social Design*, R. E. Kraut and P. Resnick (eds.), Cambridge, MA: MIT Press, pp. 21–76.
- Schneider, A., von Krogh, G., and Jäger, P. 2013. "What's coming next? Epistemic Curiosity and Lurking Behavior in Online Communities," *Computers in Human Behavior* (29:1), pp. 293–303.
- Seidman, S. B. 1983. "Network Structure and Minimum Degree," *Social Networks* (5:3), pp. 269–287.
- Shankar, V., Urban, G. L., and Sultan, F. 2002. "Online Trust: A Stakeholder Perspective, Concepts, Implications, and Future Directions," *The Journal of Strategic Information Systems* (11:3), pp. 325–344.
- Shneiderman, B. 2015. "Building Trusted Social Media Communities: A Research Roadmap for Promoting Credible Content," in *Roles, Trust, and Reputation in Social Media Knowledge Markets*, Computational Social Sciences, E. Bertino and S. A. Matei (eds.), Cham (ZG), Switzerland: Springer International Publishing, pp. 35–43.
- Sproull, L., and Arriaga, M. 2007. "Online Communities," in *Handbook of Computer Networks: Distributed Networks, Network Planning, Control, Management, and New Trends and Applications*, H. Bidgoli (ed.), Hoboken, NJ: John Wiley & Sons.
- Stanford, N. 2012. *Organizational Health: An Integrated Approach to Building Optimum Performance*, London, UK: Kogan Page Publishers.
- Urquhart, C., and Vaast, E. 2012. "Building Social Media Theory from Case Studies: A New Frontier for IS Research," in *Proceedings of the 2012 International Conference on information Systems (ICIS)*.
- Van de Ven, A. H. 2007. *Engaged Scholarship: A Guide for Organizational and Social Research: A Guide for Organizational and Social Research*, Oxford, UK: Oxford University Press.
- Wagner, D., Vollmar, G., and Wagner, H.-T. 2014. "The Impact of Information Technology on Knowledge Creation: An Affordance Approach to Social Media," *Journal of Enterprise Information Management* (27:1), pp. 31–44.
- Wallace, P. M. 2001. *The Psychology of the Internet*, Cambridge, UK: Cambridge University Press.
- Wang, X., Butler, B. S., and Ren, Y. 2013. "The Impact of Membership Overlap on Growth: An Ecological Competition View of Online Groups," *Organization Science* (24:2), pp. 414–431.
- Wang, X., and Lantzy, S. 2011. "A Systematic Examination of Member Turnover and Online Community Health," in *Proceedings of the 2011 International Conference on information Systems (ICIS)*.
- Wasko, M. M., and Faraj, S. 2005. "Why Should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice," *MIS Quarterly* (29:1), pp. 35–57.
- Watson-Manheim, M. B., and Bélanger, F. 2007. "Communication Media Repertoires: Dealing With the Multiplicity of Media Choices," *MIS Quarterly* (31:2), pp. 267–293.
- Weinberg, B. D., de Ruyter, K., Dellarocas, C., Buck, M., and Keeling, D. I. 2013. "Destination Social Business: Exploring the Organizations' Journey with Social Media, Collaborative Community and Expressive Individuality," *Journal of Interactive Marketing*, (27:4), pp. 299–310.
- World Health Organization. 1948. "WHO Definition of Health," (available at <http://www.who.int/about/definition/en/print.html>; retrieved September 1, 2014).
- Yin, R. K. 2009. *Case Study Research: Design and Methods*, Thousand Oaks, CA: Sage.
- Young, C. 2013. "Community Management That Works: How to Build and Sustain a Thriving Online Health Community," *Journal of Medical Internet Research* (15:6) p. e119.